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TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLES:—Municipal Art 501
The Pepper-tree. (With figure.) 502
Some Notes on Timber-culture ..... *F. A. Waugh.* 502
Vaccinium vacillans with White Fruit ..... *Rev. E. J. Hill.* 503
FOREIGN CORRESPONDENCE:—London Letter ..... *W. Watson.* 503
PLANT NOTES:—Chamædorea glaucifolia. (With figure.) 504
CULTURAL DEPARTMENT:—The Selection of Carnation Cuttings ..... *Lathrop Wight.* 506
Violet Notes ..... *W. N. Craig.* 506
Seasonable Garden Notes ..... *W. E. Endicott.* 507
Notes on Begonias ..... *Robert Cameron.* 508
CORRESPONDENCE:—Schools of Horticulture ..... *Louis Bevier.* 508
RECENT PUBLICATIONS 509
NOTES 510
ILLUSTRATIONS:—Branch of Pepper-tree, Schinus Molle, with berries, Fig. 69 ... 505
Chamædorea glaucifolia, Fig 70 507

Municipal Art.

IT has never been contended, so far as we know, that an election by the people to a municipal office entitles the successful candidate to be considered a master of liberal arts or an expert in the industrial arts. The man who is made city Comptroller by the Mayor, or Commissioner of Public Works, will hardly consider such an appointment equivalent to taking a degree in philosophy or the sciences, or in mechanical engineering. In regard to the foundations of a roadway or a bridge neither the Mayor nor the Comptroller would consider that his official position justified him in acting against the advice of a board of civil engineers, and even in some questions relating to the fine arts city officials have been known to manifest some hesitation before flouting the advice of men whose professional standing is recognized the world over. Thus, if a great public building were to be constructed, a mayor or a commissioner would probably consult an architect rather than attempt to devise a plan himself. On the other hand, park commissioners have often assumed to pass upon the artistic qualities of statues and memorials presented to the city and decide upon their location instead of referring these questions to some expert of taste and training, and last week four city officers and a representative of the Grand Army of the Republic used their positions to decide a critical question relating to the most important public monument ever erected in this city, in direct opposition to the carefully prepared counsel of every organized body of artists and art critics in this city.

Now, it is very evident that if New York is to have any municipal art worthy of the name we shall be indebted for it to artists. If there is ever to be anything like a well-considered scheme of decorative treatment for the city, any individual works or related series of works which will delight the eye and kindle the imagination, they will be created by artists. No one considers it the duty of the Comptroller or of the Recorder or the commander of the Grand Army of the Republic to design such works or to arrange them. No one would think of asking ex-officio advice of any of them on a matter of art. If in any special case they are clothed with final authority in matters of this sort it is quite as plainly their duty to refer them to trained artists as it would be to refer a problem relating to public buildings to an architect, or a question of law to the Corporation Counsel. If it is argued that these men are in certain cases entrusted by law with the decisions of such matters, and that they must, therefore, act on their personal responsibility, we reply that their action is in the nature of a breach of trust if they do not decide according to the best possible light they can get on the subject, and every public officer ought to know where to look for such light.

The particular case to which we have alluded is this: The Legislature of this state appropriated a quarter of a million dollars for the erection of a memorial to the soldiers and sailors of the War for the Union, to be erected at some point designated by the Commissioners of Public Parks. Legally appointed trustees of this fund asked permission to erect the monument on the Plaza at the Fifth Avenue entrance of the park, and the Park Board, without consulting Mr. Vaux, their official adviser, at once granted it. Of course, this was a fundamental mistake, for since none of the trustees nor the Park Commissioners have had any such training as would give special weight to their opinion as to the location of a work of art, they should have at once asked for expert counsel. In some way the matter was at length brought before the National Sculpture Society, and this society, in connection with eight other associations, which together have organized a central body known as the Fine Arts Federation of this city, presented a report last week to the Monument Committee, in which another site is unanimously recommended. They took pains to give reasons why the Plaza was an improper place and why the point where Seventy-sixth Street and Riverside Park meet is in every way suitable. The Plaza is identified with the entrance of the park, and a lofty structure there will inevitably destroy the effect of the lower gateways which may in the future be built at this entrance. The plaza is low, and the proper place for a column or tower, such as is contemplated, should plainly be on higher ground. The monument should be on the axis of broad streets, instead of at one side of them, so that it could be viewed at long distances within the city. It should be at a point visible from the noble waterways which surround the city, where there is sufficient space for ceremonial displays, both military and naval, and certainly where it would not be dwarfed in stature as it would be on the plaza by the tall buildings around it. If the structure were set at the point recommended by the Fine Arts Federation it would be visible from the Hudson River as far north as Irvington; it could be seen from Staten Island and over the low grounds south of Jersey City as far away as Elizabeth, and the view from its summit would be magnificent. It would be a prominent object in the foreground to all who cross the proposed Hudson River bridge, and to every one who sails past it on the river. If placed at the southern end of the drive, with General Grant's tomb at the opposite extremity, the two could be connected by a series of monumental works which would add to the dignity of this noble parkway from end to end. These are a few of the points of this instructive report, but we think no one can read it through without feeling the convincing force of the array of arguments presented for the site recommended by the Fine Arts Federation, and yet of the six officials constituting the Monument Committee only one was willing to heed their counsel.

Now, all the members of this committee are public-spirited men, who are influenced solely, we do not doubt, by a desire to serve for the highest interests of the city. They are above any suspicion of vulgar self-seeking or other improper motive, and yet from lack of respect for expert advice their decision, if adhered to, will prove, as we firmly believe, a matter of regret to the people of the city for generations to come. If the artists are right in their view of this subject, the mistake will appear more and more serious as the years roll on. If the committee have any justifying reasons for their course which do not naturally

suggest themselves to the people of the city, they ought to be made public. This is a question in which every man, woman and child of New York is deeply interested. The arguments for the Riverside site have been plainly presented, and, so far as the reports of the meeting give any details of the discussion, no attempt was made to controvert them. Under the circumstances it is certainly due to the people that the committee should make some statement, setting forth their reasons for selecting the Plaza as the site for this memorial.

The Pepper-tree.

MUCH of the beauty of the streets and gardens of southern California is due to the presence of this South American and Mexican tree, the Schinus Molle of botanists, which Spanish priests carried to California when they established their first missions in upper California, and is now the most commonly planted shade and ornamental tree in all the region south of the Bay of San Francisco.

Schinus Molle is an aromatic tree of the family to which our Sumachs belong, with a short stout trunk covered with dark furrowed bark, a low broad head of graceful pendulous branches, light bright green persistent leaves, composed of twenty or more pairs of small leaflets, minute dicœcious yellow-green flowers in large open panicles, and bright red fragrant fruit, the size of small peas, hanging in ample clusters. Our illustration on page 505 of this issue shows one of the clusters of fruit with some leaves of this tree which is now so much at home in California, and is such a conspicuous feature of the southern California landscape that travelers from the east who are not botanists usually regard it as a native of the soil and the typical California tree—an excusable error, for it has been planted in all the southern towns much more frequently than any of the native trees.

Schinus Molle is an excellent street-tree for dry arid regions, and it seems to flourish without water and to go on producing its bright green foliage and its flowers and fruit without much regard to the seasons. In wet weather the leaves emit a pungent balsamic odor, due to the resin glands with which they abound, and which, when the leaves are placed in water, burst, giving them an apparently spontaneous movement.

In Chili, Molina tells us, in his *Saggio sulla storia naturale de Chili*, a kind of red wine of agreeable flavor, but very heating, is prepared from the berries; and from the bark a dye of the color of burned coffee is obtained, which in his time was used in Valparaiso to stain fish nets.

Some Notes on Timber-culture.

DURING the summer and fall of 1895 I was enabled to examine a number of the timber plantings in central Kansas, especially in McPherson County, where a comparatively large number of timber-claims were taken. A reasonably fair proportion of the land-titles were perfected here under the provisions of the Timber-culture act; though, as has been noted before, the ratio of titles perfected to claims filed under this act has been sorrowfully small. At present most of the plantings have attained an age of twenty years or over, and something like a fair judgment of results is possible.

In one timber-claim of the most recent planting which I visited, the entire required ten acres are set in Osage Orange; and although the land is not really good and the location in all respects unfavorable, the stand is almost perfect and the young trees present a decidedly thrifty appearance. Though the average height would certainly be less than eighteen feet, the trees are straight in trunk and uniform throughout. The trees, originally set four feet apart each way, according to the law, are now ready for thinning. Each alternate tree might properly be removed, and each would make a good vineyard stake. Osage Orange also compares very advantageously with adjacent trees of other species in another timber-claim which I examined, and where the plantings were made longer ago under the old law which required trees to be twelve feet apart each way. Many of the trees here would make moderately good fence-posts, though the trunks are by no means so straight and uniform as in the block planted four feet apart. The advantage of planting close at first is abundantly indicated by a comparison of these two blocks.

Black Walnut appeared in considerable quantity in three of the claims examined. In all cases it commends itself to those who yet wish to plant trees in that section. I was able also to compare plantings of this tree made twelve feet apart with others made closer, but, unlike the Osage Orange, the Walnut seems to have done better when widely set. This apparent discrepancy, however, I suspect, is due to the fact that the closer plantings were not duly thinned. In both the cases of thick planting which I noted, the stage at which thinning should have begun has long been passed. I observed a marked decline in vegetative vigor in the crowded trees as compared with those near by which had more room. A slight difference of moisture supply and depth of soil occurring within a few feet had also caused a most remarkable difference in growth among the crowded Walnuts, showing how seriously the young trees were exhausting their food-supply. The Walnut-trees in this section of country have withstood the inclemencies of heat and drought and wind in a very creditable fashion; and the posts and stakes now available from them make them as valuable probably as any other species. It is also worth while to remark that these trees have been bearing fair crops of nuts since they became about ten years of age. The great numbers of tent-caterpillars' nets in the tree-tops during summer and fall make them often unsightly, and are otherwise a serious matter.

Cottonwoods were extensively planted all over the section visited. They probably made a large majority of all the trees set in timber-claims, shelter-belts and plantings of all sorts whatsoever, for the early Kansas planter took little thought for the selection of any variety for any special purpose. A tree was a tree, and the faster it would grow the better he liked it; and nothing grew faster than the Cottonwood. The showings made on prairie farms in a few years were always surprising, but the time has already been long enough to demonstrate plainly the weak points of the Cottonwood. In all upland plantings the once thrifty trees are already decimated, and the survivors are hurrying to premature decay. In some places where, a few years ago, Cottonwoods monopolized many acres, there is not now a tree, and the land is cultivated annually for wheat or corn. I examined two timber-claims on bottom-ground where Cottonwoods had been chiefly planted, and in these the stand was good and the trees large, straight and apparently thrifty. Tree beside tree stood forty or fifty feet tall, with straight clean trunk; but it must be borne in mind that their value for almost any purpose is not to be compared with that of the Osage Orange or Walnut. In both plantings mentioned above a part of the respective blocks ran up onto higher ground, and here the desolation was as perfect as in upland-tree claims and much more marked from its proximity to the better growth. At Garden City, Finney County, Kansas, where the Cottonwood-trees wet their feet in the irrigating ditches, the growth is enormous and the promise brighter. Those who have seen the older irrigated Cottonwoods at Denver and Greeley, Colorado, and at Salt Lake City will know what magnificent trees may be grown in a decade or two.

Box-elders, Acer Negundo, were also freely planted in timber-claims and shelter-belts on account of their ease of propagation. But their story is the same as that of the Cottonwood, except that they never did amount to anything. They have succumbed by thousands to the recent protracted droughts, and dead and misshapen trees now disfigure the landscape everywhere. Grown on upland the tree never makes either posts, stakes or firewood.

Catalpa speciosa was extensively planted, but in all

plantings which I have seen, all on upland, it has not fulfilled the promises made for it. Even when planted close and well treated, the small trunks are crooked and soon divide into useless branches. Ailanthus has done much better, for it makes a rapid growth and a straight unbranched trunk. Within a very few years it makes comparatively good fence-stakes. It seems also to be tolerably strong in drought-resistance, though there is little promise that the trees on Kansas upland will ever come to the perfection of the old Ailanthus-trees about the Temple Square, in Salt Lake, where the rows are closely paralleled by ditches of flowing water.

Black Locust made a good growth on these prairie claims, but has been almost completely cleared away by borers. Many other species were planted, but none in great quantities, and there are none which have gained enough of reputation to justify their exclusive use in future plantings.

Manhattan, Kansas. *F. A. Waugh.*

Vaccinium vacillans with White Fruit.

A VARIETY of this Low Blueberry with light-colored fruit was found last summer in the sand region east of Chicago. When growing in the shade the berries were white or faintly tinged with red, but in the bright sunlight they became flesh-colored or rosy on the exposed side. Their shape was obovate or pyriform, so that they differ from the common form, which is usually globular or depressed globose. They were very sweet and juicy and in quality superior to the average product of the Low Blueberry, for it varies considerably, being sometimes large and juicy, like the fruit of Vaccinium Pennsylvanicum and V. Canadense, but ordinarily smaller and drier. The leaves were also smaller than usual, and were broad oval to roundish in outline. These distinctions, if they remain constant, show a well-marked variety.

The bushes were very prolific in fruit and covered an area about three rods long by eight or ten feet to a rod in width. Nearly every bush was bearing, and none of the ordinary form was found mixed with them. Assuming that they all were derived from a single sport of the typical plant, the stoloniferous habit of Vaccinium vacillans would easily account for the number of plants found together, if they do not come true from seed. Many of the Vacciniums spread extensively by means of subterranean stems. I have traced those of the Low Blueberry several feet in the loose sand. These underground stems emit many fibrous roots, especially at the joints, and occasional branches. Those rising above ground grow into the ordinary shrub; hence an individual plant may be made up of the parts underground and several aërial stems.

By inquiring I learned from the berry-pickers that they were well acquainted with these white-fruited bushes. Two other patches, at least, were mentioned, but they were said to be found more frequently as single bushes, or two or three in company. From this I think it quite probable that the seed is fertile and that the variety is disseminated in this way.

Though albinoism has been observed in the fruit of various species of Vaccinium in this country and in Europe, and also in the Black Huckleberry, Gaylussacia resinosa, I can find no case on record for V. vacillans. White huckleberries being also caused by a fungus (Sclerotinia baccarum), these berries were carefully examined for fungoid growths. None were found in them, nor any on the bushes that could have affected the fruit in such a way. As a whole, they were remarkably healthy-looking plants, some root swellings only being noticed in one or two plants that were apparently due to a fungus. The fruit was so pure in color and the skin so thin that it was almost translucent when fully ripe, and has become fully so in some specimens preserved in salycilic acid. Professor Porter has also mentioned the translucency of the white berries of V. Pennsylvanicum, and of alcoholic specimens of the white fruit of Gaylussacia resinosa.

Chicago, Ill. *E. J. Hill.*

Foreign Correspondence.

London Letter.

New Garden Plants, 1894.—The list of new plants for 1894, which forms Appendix II. of the *Kew Bulletin*, has just been issued; price, fourpence. It contains short descriptions of each, with references to the original description and figures of nearly five hundred plants introduced into cultivation during the past year. It is unnecessary to point out the value such a list must have for botanists as well as horticulturists, as it includes not only all the species but all varieties as well, with botanical names, and all true hybrids with their parents. A few of the plants included are old and forgotten garden plants reintroduced. The list is compiled from all botanical and horticultural publications in Europe and America in which new plants are known to be recorded. A similar list for each year has been prepared annually at Kew, and published as an appendix to the *Bulletin* since 1887. The bulk of the new plants of 1894 are Orchids, and as evidence of the activity of the hybridist, it is noteworthy that no less than thirty-eight hybrid Cypripediums and twenty-two hybrid Lælias and Cattleyas were flowered for the first time and given prominent notice last year.

Picturesque Scenery at Kew.—Artists and photographers are fully alive to the beauties of Kew scenery, and numbers of them may be seen at work at any time of the year, in the morning as well as the afternoon. For the last two years two eminent artists, Monsieur and Madame de L'Aubinière, have been engaged in painting pictures of the scenery about the lake in the gardens. Their pictures, nearly one hundred in number, are now on exhibition in a room adjoining the "North" gallery, where they are a source of gratification to visitors. The lake in the Royal Gardens was made about forty years ago by Sir William Hooker. It is an irregular piece of water with three small wooded islands, and is fed by the river Thames. The pinetum extends along its south side, and its margin is broken by a collection of Willows and Alders. The beauty of the views to be obtained from various points is well shown in the pictures above mentioned. Many of these views have lately been opened up by the judicious removal of superfluous trees and shrubs.

Idria Columnaria.—Can some correspondent in Lower California give us some information with regard to this plant? I lately saw a picture of it in an American publication (I forget which), representing a plant with a thick Cactus-like or sugar-loaf shaped stem, bearing a few short branches, with leaves and flowers at the top. Inquiries in America elicited no information, except that the plant was in some inaccessible region in Lower California. I learn from Dr. Masters, however, that a plant of it has lately been added to the collection in the Jardin des Plantes, Paris, where he saw it a few weeks ago. He describes it as having a stem two to three feet high, and as much through at the base, with slender branches near the top, and ovate acute leaves. Idria is supposed to be related to the genus Fouquiera, of which F. splendens is in cultivation here. Living examples of the Idria would be greatly valued at Kew. What the Frenchmen in California appear to have done for Paris surely can be done by an Englishman or American for Kew.

Catasetum imperiale.—This is one of the series of large handsome-flowered Catasetums introduced last year by *L'Horticulture Internationale*, and to which I have already referred. Mr. Rolfe considers them all to be natural hybrids, between C. Bungerothii and C. macrocarpum, but they show a most extraordinary diversity both of form and color, some being exactly like C. Bungerothii in form, and to this lot belongs that now under notice, of which a plant bearing a nine-flowered scape was shown last Tuesday and easily obtained a first-class certificate. Each flower was three inches across, the sepals and petals in a cluster above the large shell-shaped lip, and the color cream-

yellow, with blotches of claret-purple. Is it possible that C. Bungerothii is a very variable species, or that from some cause or other the plants of it in one locality have sported freely? Whatever their origin there can be but one opinion as to their horticultural value, and I endorse the opinion of *The Gardeners' Chronicle*, that this C. imperiale, as shown last Tuesday, is the most gorgeous Catasetum known. I may remark here that Catasetums may be propagated from pieces of the pseudo-bulb.

Dendrobium subclausum.—Mr. Rolfe described this as a new species in the *Kew Bulletin* last year (p. 361) from a plant flowered by Messrs. J. Veitch & Sons in July, and introduced by them from the Moluccas. It was shown by them at the meeting of the Royal Horticultural Society on Tuesday last and received a botanical certificate. It has erect slender-branched pseudo-bulbs, forming a close cluster two feet high, clothed with linear lanceolate bright green leaves two inches long. The flowers are borne on the leafless pseudo-bulbs in short axillary few-flowered racemes; they are an inch long, shaped like the flowers of Dendrobium longicornu, but narrower and colored brilliant cinnabar-orange, the pedicels also being colored. The lip is peculiar in being folded in at the apex and almost inclosing the column. It is a remarkable and attractive plant and is sure to be made to serve the purpose of the hybridist, the color of the flowers being exceptional in this genus.

Lælio-Cattleya Ingrami is a beautiful hybrid which was raised by Mr. C. N. L. Ingram, in 1892, from Lælia pumila Dayana and C. aurea, and which is now in the collection of Sir F. Wigan, at Sheen, who paid fifty guineas for it. Flowers of it were exhibited last Tuesday. In size, color and general form it resembles the Lælia except in the labellum, which shows a good deal of the influence of the Cattleya. It is one of the most beautiful of the Lælio-Cattleya hybrids, and I learn from Sir F. Wigan's Orchid grower that it is easily kept in health.

Arundina Philippii, a supposed new species, was shown in flower on Tuesday by Sir Trevor Lawrence. I should call it a narrow-leaved, small-flowered variety of the well-known A. bambusæfolia; the flowers are about one and a half inches across, and colored pale lavender with a crimson blotch on the lip. It was awarded a botanical certificate.

Cypripedium platycolor is a new hybrid between C. concolor and C. Stonei platytœnium, the name being hybrid also. It originated in the collection of Sir Trevor Lawrence, who showed it in flower on Tuesday last. In general characters it resembles C. concolawre (concolor × Lawrencianum), but the flowers show the influence of C. Stonei. The scape bore three flowers and a bud.

Begonia Frœbelii.—This species was introduced by the Zurich nurseryman, after whom it was named, about twenty years ago, when Roezl discovered it in Ecuador. Hitherto, however, it has found little favor as a garden plant, probably because it has refused to grow satisfactorily under the treatment which suits the ordinary tuberous Begonia. A near ally is B. polypetala, a Peruvian species, introduced in 1878 and in 1880. Messrs. Frœbel distributed a hybrid they had raised between these two, and named B. Frœbelii incomparabilis. Mr. Poë, of Cheshunt, exhibited this week a plant of this hybrid which literally staggered most of the cultivators who saw it, for it is undoubtedly one of the most beautiful of all winter-flowering Begonias. The plant was in a six-inch pot, and it bore about a dozen leaves, the largest of which measured eighteen inches in length and thirteen in width. The scapes, of which there were eight, were stout, erect, two feet high, branched, and bearing numerous flowers and buds, the former two inches across and colored bright orange scarlet. Mr. Poë grows the plants in a warm greenhouse, starting them along with B. Socotrana in August. They flower all through the winter. I should place this Begonia in the same rank as the Socotrana hybrids as a garden plant.

New Chrysanthemums.—There were several exceptionally good varieties among the new seedlings exhibited for certificates last Tuesday; they are Country of Gold, a very free-flowering, bright yellow reflexed variety, likely to prove of great service for the supply of cut flowers for market; Bonnie Dundee, a well-formed incurved variety after the style of Lord Brook, but yellower; Oceana, large as and shaped like Viviand Morel, but of a much more pleasing pinkish color; William Slogrove, a magnificent incurved Japanese, almost a true incurved, the flowers large, full and colored deep golden-yellow; this was generally pronounced to be one of the best of this year's productions. Sir Trevor Lawrence is a large incurved, very like Queen of England; and Golden Dart, a yellow-flowered Japanese variety of medium size, was certificated as a free and useful plant for the market-grower. We are still busy with exhibitions of Chrysanthemums, the National Society having a three days' show at the Aquarium next week. The mild, foggy and wet weather of the last few days has, however, shortened the lives of many of the flowers.

London. *W. Watson.*

Plant Notes.

Chamædorea glaucifolia.

THE Chamædoreas are very graceful and beautiful Palms, natives of South America. They are shade-loving plants, growing in the depth of dense woods where hardly ever a ray of sunshine penetrates. They are generally small and slender, with elegant pinnate leaves and diœcious flowers; some are climbers, supporting themselves by means of hooked tendrils at the end of the leaves. The above species (see figure 70, page 507) is one of the most beautiful of the genus, a native of Guatemala, and accustomed to a moderate temperature. It grows to a height of twelve feet or more, with a slender ringed stem about as thick as an ordinary walking-stick, or in strong specimens an inch or an inch and a half in diameter. The leaves are pinnate, of a pleasing glaucous-green, four to six feet in length, with long arching pinnæ. The species flowers quite freely under cultivation, male and female flowers being produced on different plants. The large erect inflorescence rises from the axil of a leaf above the foliage, and renders the plant quite picturesque. The flowers are greenish yellow, with three fleshy petals. The female plants are most common in gardens.

In greenhouses it thrives well in the deepest shade and in a temperature of seventy degrees. It remains a convenient size for years, and is, therefore, well adapted as a decorative plant for a dwelling-house. It is strange that these interesting miniature Palms, of which seeds must be easy to obtain, should not force the larger and coarser forms into the background.

Cladrastis lutea.—This tree, known in cultivation as the Virgilia, and in the region of which it is a native as the Yellow-wood, is one of the rarest trees of the North American forests, being found in a few isolated places in central Kentucky, central Tennessee and the western slopes of the high mountains of east Tennessee and in Cherokee County, North Carolina. Like many other trees of restricted range, it thrives under cultivation in widely different soils and climates. This southern tree is perfectly hardy in New England, and ripens its wood in exposed situations in Canada without any artificial protection. Even in the mid-western states it flourishes as far north as Iowa, where many of the forest trees and shrubs of New England fail to endure the heat and drought of summer and the cold of winter. At its best it attains a height of sixty feet, with a trunk two feet in diameter, while in exceptional cases it is still larger. It usually divides into two or three main limbs not far from the ground, which spread widely and ramify into slender and somewhat pendulous branchlets, forming a broad and graceful head. At this season it is a beautiful object, the bark of its trunk being silvery gray and of a smooth, fine texture, that on the main branches a lighter ash color, and the lustrous red-brown

spray is as refined and delicate as that of the American Beech. The leaves appear early in spring and are of a light, cheerful green, turning to a clean uniform yellow in autumn. The white, fragrant pea-shaped flowers hang in panicles a foot or more in length, so that all the year through it is one of the very best of what are known as lawn trees. One objection to it is that when the limbs are weighted with ice in winter they sometimes break off or the trunk splits apart. A fine specimen (figured on page 92 of vol. i.) split at the fork some years ago, but the limbs were drawn together and an iron rod bolted through them, and no trace of the disaster now remains. It should be said, too, that the tree only flowers abundantly on alternate years, although there are some flowers every year.

Fig. 69.—Branch of Pepper-tree, Schinus Molle, with berries.—See page 502.

CANNA, JOHN WHITE.—The interest excited by the introduction of the dwarf French Canna, Madame Crozy, has led to the raising and introduction of many new forms, varying much in the size and color of the flowers and less in the form and color of the foliage. As the hybrids bear seeds very freely, which are easily and quickly grown into flowering plants, the natural result is a surfeit of named and unnamed kinds, with flowers mostly in shades of reds and yellows, or a mixture of these colors. We have not had varieties with very striking differences of foliage, the leaves being usually of varying shades of green, or with red or bronzy suffusions of a rather dull character. Variegated forms there have been, with more or less white margins to the leaves, but these markings have not been so effective as to render the plants especially striking in the garden. As usually happens when a plant is harassed by cultivators, the Canna seems to have taken a new departure also. Among a lot of seedlings from the best dwarf varieties grown by John White, of Elizabeth, New Jersey, in 1894, there appeared a plant with a novel color in the foliage, and this, carefully saved and grown, has since been tested in the open and under glass. The plant attains a height of three feet, and the foliage is of the ordinary type, but very curiously and attractively colored. The young leaves are of a pale yellow, with narrow margins of dark red, and as they advance there appears some suffusion of light green, mostly in spots or dashes. The leaves retain this color till they gradually mature by losing the yellow and gaining a deep suffusion of pink with an admixture of green. The plant in this condition is decidedly striking and novel, the general color-effect being decidedly pink. The plant is said to have held its color perfectly under the sunlight this season, and it would appear that we have in this variety not only a new departure, but a first-rate, showy foliage plant for decorative effects in the garden. The flowers are small, of a deep scarlet and of no value, but the ovaries, which are dark red, seem to be more persistent and decorative than usual to this plant.

BEGONIA ACUMINATA. — This is another valuable winter-flowering shrubby Begonia. The leaves are not more than two or two and a half inches long, very thick and fleshy, with coarse hairy veins and coarsely toothed. The color is a deep olive-green, tinted red below. The flowers measure over an inch across, generally pale flesh-colored, but sometimes white. In the female flowers the petals are narrow, ovate-acuminate; in the male flowers they are broader. The loose few-flowered cymes are borne abundantly from the axils of the upper leaves. The stem is stout, erect and fleshy, growing to a height of a foot or more. The plant is generally bushy and covered with a profusion of flowers during the early winter months. It is a West Indian species of great merit, but not very common in cultivation at the present time.

IMPATIENS SULTANI VIOLACEA.—This very floriferous plant, like other varieties of this species, is an excellent winter-flowering kind, easy of culture and satisfactory when well grown. The flowers are fully an inch across and of a roundish outline and bright rosy pink. There are numerous

varieties and hybrids lately raised and introduced by German seedsmen, of more or less dwarfish habit, and varying from white to flesh color, salmon-rose and the deeper shades of pink and crimson. Impatiens Sultani may be grown from cuttings, which can be rooted with ease at any time of the year, or by means of seeds, which grow readily. To form nice winter-flowering specimens the seeds should be sown early in spring, singly, in two-inch pots in rich fibrous soil. The young plants require plenty of light and should be grown in a warm greenhouse as close to the glass as practicable.

Centropogon Lucyanus.—Showy in color and graceful in habit, this stove-perennial of the Campanula family is one of our best winter-flowering plants. It is a garden hybrid, raised by the French horticulturist, Monsieur Desponds, between Centropogon fastuosus and Siphocampylus betulæfolius. The flowers are curved, tubular, about two inches long, with recurved segments and a very prominent hairy stigma longer than the corolla; color, bright rosy-carmine. They are produced several together on short side-shoots, and when the plant is in full bloom it is very attractive. The leaves are ovate or oblong-lanceolate, serrated, smooth, dull green; stem slender, growing to the height of four or five feet, and herbaceous. This is a plant for the warm greenhouse; it should be grown in a half-shady position in well-drained pots, in a mixture of rich loam, leaf-mold and sand, with an addition of some well-rotted horse-manure. During the growing season too much water cannot be given. Old plants may also be planted out in the open air in a moist and half-shady position, where it will grow rapidly and form numerous side-shoots. As the flowering during winter depends upon these, the plants should, of course, not be pruned until after it flowers, when they can be dried off slightly and cut down to the ground before being planted out. Plants treated in this way should be lifted early and potted in moderately sized pots. They may also be planted out in a border in the conservatory, where they can be left for years. For ordinary use small plants raised by means of herbaceous cuttings in spring and grown on as rapidly as possible are the best. These will reach a considerable size during the first season, and if grown in pots should be gradually ripened as winter draws near. As this is one of the best plants of its class and suitable for all kinds of winter decoration, it is surprising that no enterprising florist has taken it in hand long before this.

Cultural Department.

The Selection of Carnation Cuttings.

THE importance of selecting strong stock from which cuttings are taken if we are to have good plants, is set forth in an article by Mr. Lothrop Wight in a late number of the *Florists' Exchange*, from which we take the following points:

Individual plants, decidedly better than their neighbors, should be marked and cuttings from them kept by themselves. This is not to improve the type, but to help keep the stock up to the standard, as plants selected from cuttings at random will show deterioration. Cuttings taken from plants on the outside rows of the benches where the shoots are fully exposed to the light will be larger and more stocky than those taken from the inner rows. Cuttings will generally be at their best when the flower is fully open, and no cuttings should be taken from a stem which does not have a flower at the end of it. Some varieties give three or four good cuttings to a stem, and where the stock is limited there is no objection to taking every cutting on the plant, leaving only enough to keep up a supply of flowering shoots. Every available cutting should be taken from plants which show unusual vigor of growth, for the exceptional vigor of the plant extends to all its parts and even to the smaller stems. If set in flats, cuttings can be moved into the sun as they begin to root, for as soon as they are rooted they are plants and should not be kept in sand and shade, which are both unsuitable to plant-growth. Therefore they should be taken out of the sand and put in the sun as soon as possible. Bottom-heat is unnecessary, the usual temperature of a Carnation-house being about right. Where cuttings are grown for the trade bottom-heat is an advantage, because they root more quickly and evenly, but it is questionable if they make as good plants, and when quality is the point sought rather than quantity late-struck cuttings are all right. For abundant bloom large plants from early-struck cuttings are essential.

Violet Notes.

THE remarkably open weather which prevailed until the early part of December has made Violets bloom with unusual freedom. I do not recollect to have gathered so many flowers to the plant for several years as I have during October and November just past. Severe weather and heavy snowfalls are, however, likely to come at any time, and frames should by this time be well protected to resist such changes. Dry leaves packed around the sides, with a slanting board laid over them to throw off water will prevent frost from penetrating the sides, while mats and shutters which project two or three inches over the top and bottom of the sashes are used for top-covering. Plants in frames require a great deal of attention during the dark winter months, and light and air must be given on every possible opportunity. It does no harm to leave the frames covered with snow for a couple of days in severe weather, but great damage is done if snow is allowed to remain for a week, when mold will spread with alarming rapidity. Even if sunlight can be admitted for but three hours and a little ventilation given, it is surprising how the plants are benefited. There are very few days during the whole winter when we do not give both light and air. Violets resent coddling, and air should be given freely whenever the outside temperature allows. If the thermometer registers several degrees below freezing, even in midwinter, the sun warms the frames sufficiently to permit a moderate amount of air being admitted. Violets in frames make much more work than when they are grown in houses, and the flowers are less convenient to pick, but the quality of blooms is as good in all kinds, and much better in some, particularly the single varieties; the flowering season, too, is a little longer than with those grown in artificial heat.

It is well to look over the plants every week and remove runners, decaying leaves and all signs of mold. When water is required, the forenoon of a bright day should be selected and care taken to wet the foliage as little as possible; tepid water ought to be used. The diseases known as spot and leaf-curl still continue to wipe out batches of promising plants. The real cause of these diseases are still unknown, and we have no certain remedy for them. One day the plants look thrifty, the next day a few spots appear; those affected may be picked off, but probably within two weeks the whole stock is an eyesore and fit for the rubbish heap. A neighboring florist, who for several years had grown splendid crops of Marie Louise, had, four weeks ago, the finest house of this kind I ever saw, with not a sign of disease anywhere on his place. His plants had every possible attention and promised a splendid harvest of bloom for the winter; three weeks later I saw the same house and there was hardly a single healthy leaf, and every plant had to be thrown out. The grower of these plants told me that during a spell of sunless weather in November the whole work of destruction was done within a week.

Where it is well grown, Marie Louise must still take rank as the best Violet grown; very few, however, have clean stock of it in this section. The way this and other varieties are grown by Mr. A. McKay, of South Framingham, Massachusetts, is an object-lesson to those who have never seen Violets as he grows them. Last year he had flowers of Marie Louise which covered a silver dollar, and this season his stock of this variety, as well as Farquhar, Swanley White and Lady Hume Campbell, is superb, and promises to beat last year's record. We recently received some blooms of the new variety Farquhar from a friend on Cape Cod; they averaged as large as a half-dollar, and some were slightly larger; for so early in the season these were exceptionally fine, and the stems were seven to eight inches in length. This variety promises to be a useful one; in color it is identical with Marie Louise. Lady Hume Campbell is probably more grown than any other double variety. Last year our plants in frames gave hardly any flowers until the end of February; this season they have been blooming finely for the past six weeks. Although a good deal paler than Marie Louise in color, its many good qualities commend it to nearly all who have grown it. It is not disease-proof by any means, as we have seen whole houses of it wiped out, but, taken all in all, it is the cleanest of the double ones we have grown, and many who have failed to make a success

of other kinds now rely on it exclusively. The flowers are of good size and are produced on fine stems.

Among single varieties the new California makes the most rampant growth and flowers quite freely, occasionally two and three flower-buds appearing on a stem. For length of stem the introduction from the Pacific coast must take first honors, and in this respect it is all that the introducers claimed. Its fragrance is fine and flower of good size, although a long way from covering a silver dollar as yet. In color, however, we have failed to see the "deep violet-purple," and the flower lacks the substance of other single varieties. We have seen this variety growing in a number of places, and few of the growers were favorably impressed with it. At the end of the flowering season we can, however, better estimate its value. Wellsiana must take rank as the finest of the dark single kinds; this variety and The Czar both succeed better in frames than in heated structures. The former makes very few runners, and requires to be propagated by cuttings inserted in sand. The flower is larger and darker in color than The Czar. It produces much smaller foliage, however, and as the older variety has an abundance of good-sized leaves, it is specially useful during the winter season, when it is sometimes as difficult to get a sufficiency of these as of flowers.

Taunton, Mass. *W. N. Craig.*

Seasonable Garden Notes.

THE generally mild weather which has so far prevailed has enabled cultivators to lift tender bulbs and to plant the hardy ones with less trouble and anxiety than last year, when a heavy snowstorm on November 6th found the bulbs of Dahlias and Gladioli and others in the earth, where many of them died, and many sorts, especially Irises and Ixias, still in boxes and bogs. I always delay planting Ixias until the last moment, because they are more inclined than most things to make an autumnal growth, and this year planted them November 30th. The past season has been a good one on the whole, especially so far as increase of bulbs is concerned. Some months ago I wrote that I thought a Gladiolus seedling of the present year would blossom soon. It did so in October, and, although the variety was exceedingly poor, I was glad to beat the record, for, so far as I know, this is the first instance of as early flowering. The new Tigridia alba immaculata is a beautiful flower, well worthy the attention of growers of bulbous plants; it is, at least with me, a stronger grower than the older white variety. I am not sure that it is more beautiful, but it is different, and gives variety. Though unspotted, the white shades, in parts of the centre, to a creamy tint. T. violacea is a small-flowered kind, but pretty.

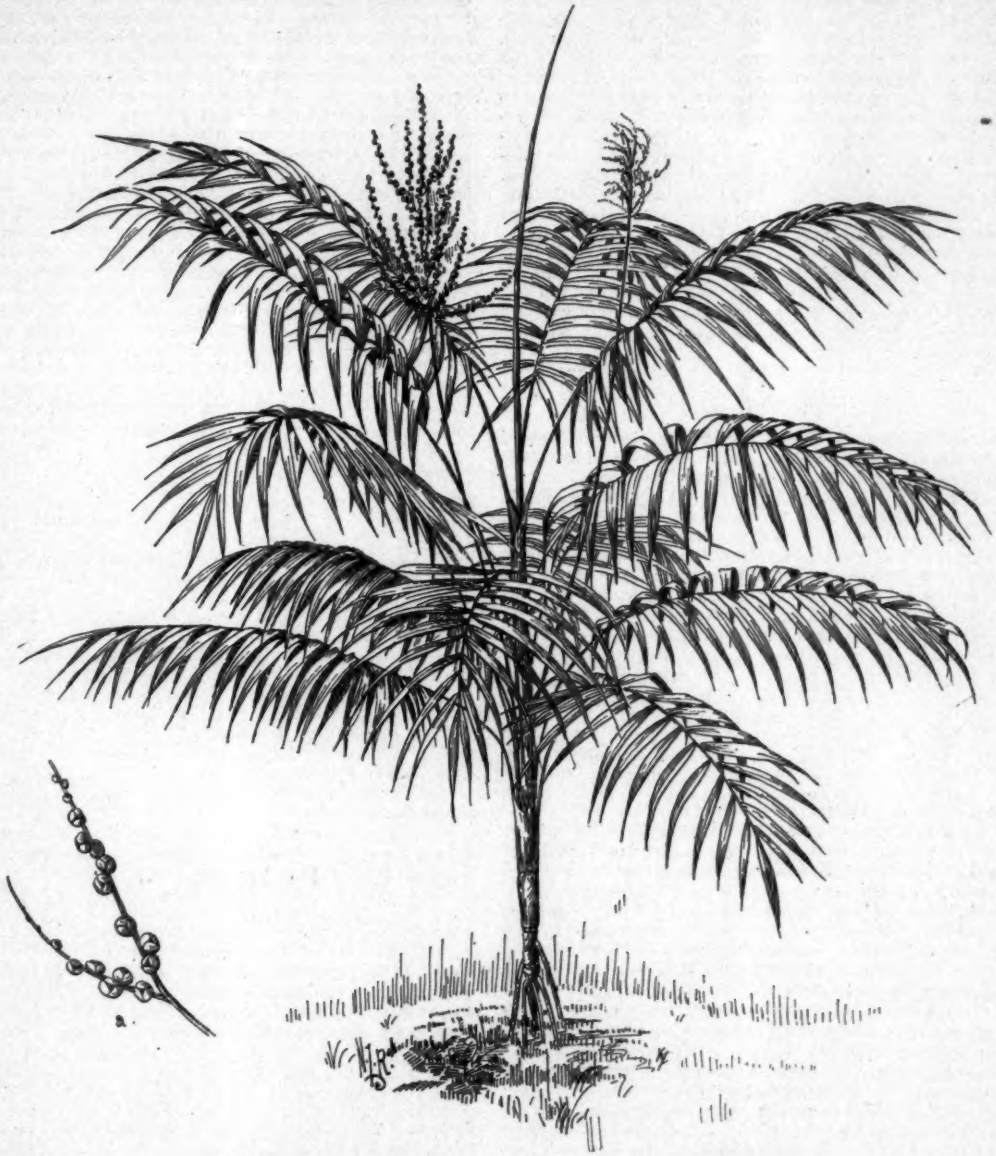

Fig. 70.—Chamædorea glaucifolia. *a*. Part of inflorescence.—See page 504.

Two plants are offered for sale as Ophiopogon spicatus variegatus. One of these is the true species, with spikes of beautiful purple or violet flowers of long duration, followed by numerous ornamental, bright blue berries; but what is the other plant which produces white flowers in clusters of two or three along a central spike, the spike and flowers both drooping, and white oblong berries? Tulbaghia violacea is a good pot-plant, flowering six or seven times a year. Its flowers are of a tint somewhat redder than its name implies. It gives satisfaction planted out in the summer, but care must be taken in lifting it, or all of the winter bloom will be lost. I grow a few Sauromatum guttatum, not for the large, spotted, carrion-scented flowers which are commonly produced before the tuber is planted, but for the striking foliage with its serpent-spotted stalks. The tubers grow to the size of a cocoanut. The large ones are somewhat tender, but the offsets, of the size of a walnut, are perfectly hardy, such as are left over in the ground, coming up in the spring. I do not remember to have seen any complaint of the ravages of the black blister-beetles, the kind we see on the Golden-rod, among any garden plants, except the Asters. They have been quite troublesome here for a few years past, devouring Gladioli and Dahlias. These they destroyed to such an extent that, in 1894, at the end of August, I found it almost impossible to find a perfect flower of the latter or spike of the former, except, very curiously, a Lemoinei variety called Centurion, which was untouched, though the insects fairly swarmed on all sides of it. I know no way of fighting this pest except to pick them off. They have a way of dropping to the ground when alarmed, when a prompt foot can easily destroy them, since they generally lie still for a moment.

Canton, Mass. *W. E. Endicott.*

Notes on Begonias.

BEGONIA IMPERIALIS is a species that is always admired when well grown; its flowers are not showy, and the plant is valued chiefly for its handsome foliage. It is grown here in shallow pans filled with loose light soil and in a house where the temperature ranges from fifty-five to sixty degrees. A partially shaded position and a rather moist atmosphere suit it. It has short, thick, creeping stems, and its dark olive-green leaves have irregular bands of bright green along the nerves. The leaves are cordate and from four to six inches wide and are completely covered with long hairs. The hairy petioles raise the leaves from four to six inches above the soil in the pots or pans, and when the plants are healthy and happy the foliage completely hides the soil. The small white flowers are produced on erect peduncles. The flowers have two petals and the ovary is three-angled, with one long wing. There is a variety of this species grown here which is known as B. imperialis Smaragdina, which makes an excellent companion for the type plant, from which it differs in having leaves which are entirely green. B. imperialis was introduced from Mexico by Verschaffelt.

Begonia incarnata is one of the very best species for winter flowering. The plants grown here are raised annually from cuttings made from healthy shoots in March. With a slight bottom-heat the cuttings root in a short time, and are then put into four-inch pots. In June they are planted out in the garden in a shady position, where they are well looked after in the way of watering and stirring the soil occasionally between the plants. About the first week in September the plants are lifted, being large enough then for six-inch pots, and whenever there are signs of cold nights they are put into the greenhouse. This plant is well known in gardens, and was introduced from Mexico in 1822. It has a neat habit, with erect stems from two to three feet high. The stems are well covered with unequally cordate, lanceolate, toothed leaves, which are green above and reddish beneath. The rose-colored flowers are borne on arching peduncles, the larger staminate ones having two ovate and two narrow petals, while the pistillate ones have five equal petals. The ovary is three-angled, and the wings unequal.

Begonia acuminata makes a compact bushy plant from two to three feet high, and although its flowers are not very large, yet they are very pleasing. It does very well planted out in the garden during the summer months in a sheltered and shady position, and through the winter and spring it produces white flowers an inch across. This species is a native of Jamaica, and the plants that are grown here were collected in the mountains there by me four years ago.

Begonia Olbia was introduced about twelve years ago from Brazil. Although it is a handsome plant and is easy to grow, yet it is not very common in gardens. It blooms best when about two years old. Young plants raised in spring from cuttings, although they have handsome foliage, bear flowers which lack the size and substance of those produced on older plants. This Begonia has stout, fleshy, erect stems, with leaves which have an oblique outline. Their upper surface is of a very dark bronzy green, dotted over with neat white round spots and covered with small red hairs. The under side of the leaves is deep red. The white flowers are produced in large cymes from the axils of the leaves.

Begonia Froebeli is a tuberous-rooted species which makes an excellent winter-flowering plant. Young plants raised from seed sown last March have flowered well; but seedlings do not show their true characters the first year. Some of the oldest tuberous root-stocks that are here have been grown for nine or ten years at least, and I have known them personally for eight years. When the plants have finished flowering and the leaves begin to show signs that their work for the season is over, water should be given more sparingly and finally withheld altogether. When the plants are at rest the pots are put on a shelf in the greenhouse, where they are kept dry until they show signs of growth, which usually begins in September or October. The old soil is shaken from the tubers and the plants are put into four-inch pots, and when these are full of roots a final shift is made into eight-inch pots. The leaves are annual and are obliquely cordate; some of them now measure fourteen inches long by ten wide. They are gray-green and covered with purplish velvety hairs. The flowers, measuring two inches across and borne on tall drooping cymes, are a brilliant scarlet. [See page 504.—Ed.]

Botanic Garden, Harvard University. *Robert Cameron.*

Correspondence.

Schools of Horticulture.

To the Editor of Garden and Forest:

Sir,—Your editorial in a recent issue on the "Schools of Horticulture," which have been conducted at a few points in New York state, has suggested to me that your readers may not be aware of a somewhat similar work carried on in New Jersey. The Extension Department of Rutgers College was organized in 1891. There have been given here in New Brunswick two very successful courses in Botany, the audience consisting of both men and women, residents of the town, and numbering more than fifty. Of these about twenty-five pursued the collateral studies prescribed by the lecturer and passed successfully a fairly difficult examination. The work done has been so creditable that the lecturer, Dr. Halsted, suggests an advanced course to follow, on Vegetable Anatomy, with laboratory practice with the compound microscope.

But I have more particularly in mind the successful application of University Extension methods to instruction in practical horticulture and agriculture made by the Extension Department, in affiliation with the State and the College Experiment Stations.

The methods employed are those now familiar to all under the name of University Extension, and need no description beyond noting that the unit course consists of six lecture-studies, each exercise involving a lecture proper and a class-hour for conference and discussion, together with printed syllabus, collateral reading, experiments and examination. We have arranged a series of courses on agricultural subjects, such as Agricultural Botany, Economic Entomology, Plant Foods, etc., forming quite an extensive curriculum. At present the series consists of nine courses, which we encourage our centres to take in regular sequence. As soon as the farmers are ready for it it will be easy to extend the same plan so as to cover the ground more thoroughly, and to offer some freedom of choice in accordance with the particular needs of any community. Thus, while the general courses would remain the same the more specialized courses would be different in a fruit-growing community from those recommended to a community chiefly interested in the dairy business. One of our centres is now taking the regular sequence of courses that we have laid out, and others are planning to do so. If the farmers will, in general, be willing to persevere on so systematic a scale we shall have University Extension at its very best.

The results thus far attained deserve, I think, to be generally known. The work was begun tentatively in the winter of 1891 and 1892, with a course at Freehold. Since then we have given courses in eleven different farming communities, not counting the work of the present season, which is just now beginning with a course in Botany at Moorestown. The system has received a most cordial endorsement from the State Board of Agriculture (see twenty-first Annual Report, page 106),

and the courses given have been, in general, notably successful.

In the first place, we have reached the men we desired to reach. The audiences and classes have been made up almost wholly of farmers, the large majority being between twenty-five and thirty-five years of age. The attendance, too, has been good, running as high as 119, and averaging sixty for all the courses. This has involved drives over country roads of long distances, as much sometimes as twelve miles each way.

Again, a serious purpose has been unmistakable. Almost the entire number in attendance remains for the second hour, and the discussion of practical applications of the different subjects has proved the most interesting part of the exercises. The majority have made diligent use of the syllabus, and a large number of the younger men have taken up the collateral reading in earnest. We should not naturally expect mature men engaged in active business to be willing to submit to an examination, yet not less than thirty-two persons, nearly all men, have, at the end of the six weeks' course, taken an examination on the subject treated, and twenty-nine have been successful in passing and have received the regular Extension credits.

The purely educational results, though difficult to estimate, are the most important. The practical results are easier to specify and could be detailed at considerable length. I limit myself, however, to one or two. After a course, before a Fruit Growers' Association, on The Food of Plants, a committee of farmers was appointed to purchase fertilizing materials in accordance with formulas furnished by the lecturer, instead of the prepared fertilizers already mixed, and on one hundred tons purchased a saving of $1,500 was made. In one case a permanent agricultural society which meets for the discussion of agricultural topics and has charge of the arrangement of Extension work from year to year, is the direct outgrowth of one of our courses. In general it may be said that the most important practical result is that many individuals throughout the state have been drawn into closer relations with the experiment stations.

All this is entirely distinct from the work of the Farmers' Institutes, where a very large number of single lectures are delivered each year, and it proves clearly that the methods of University Extension may be made useful in spreading the knowledge and practice of scientific agriculture.

Rutgers College, New Brunswick, N. J. *Louis Bevier.*

Recent Publications.

The Soil: Its Nature, Relations and Fundamental Principles of Management. By F. H. King, professor of Agricultural Physics in the University of Wisconsin. New York: Macmillan & Co.

It was a happy thought to issue a series of handy monographs on agricultural subjects in which the problems of rural economy should be discussed in the light of the most recent discoveries in science. This first volume, relating to the soil, presents its history, showing how sun and air and water and various forms of life have been working through long cycles of geological time and are working still, not converting it into a mere inert assemblage of chemical particles, but developing it into a scene of life, a storehouse of energy, a laboratory where invisible organisms are constantly building up and tearing down and shaping it in a hundred ways for future use. The book aims constantly to lay down principles as the basis of practice rather than to offer a collection of rules to be learned by rote. A very considerable amount of science is set forth in a popular, but in a clear and logical, way, and this will not only furnish justifying reasons for most of the ordinary processes of horticulture and agriculture, but will, of course, suggest experiments looking toward the discovery and adoption of new and improved methods. Such subjects as the physical effects of tillage and cultivation, drainage, irrigation, soil-water and its conservation, the temperature of soils, the distribution of roots, etc., are all treated with fullness and clearness. The book is written in a pictorial, though sometimes in a rather inflated, style, but it cannot but fasten the attention of any intelligent reader who is not familiar with the facts presented, and the interest is sustained from end to end. If it could be read aloud to a circle of young students of rural affairs it would certainly prove stimulating and helpful. The series is edited by Professor L. H. Bailey, and we shall look forward with much interest to the volumes which are to follow.

Maladies des Plantes Agricoles. Vol. I. By Professor Ed. Prillieux. 8vo, 420 pp., and 190 figures. Firmin-Didot, Paris, 1895.

This compact and handy volume forms one of the series entitled *Bibliothèque de l'Enseignement Agricole*, which includes a number of practical treatises on different subjects relating to agriculture. We have in recent years received from Germany a number of general works on plant diseases, and the present volume is a welcome addition to the American student of vegetable pathology, for it offers in a condensed and copiously illustrated form a presentation of the subject from the French standpoint. The author, Professor Ed. Prillieux, of the Institut National Agronomique, has the talent, characteristic of his nation, of writing in an interesting manner, and has given a simple statement of the subject, wisely avoiding lengthy discussions of disputed questions. The present volume includes the diseases of cultivated plants as well as those of fruit and forest trees which are caused by vegetable parasites, beginning with those caused by bacteria. A second volume, which we presume is to include diseases caused by non-vegetable parasites, is announced to appear soon.

Notes.

Varieties of the European Holly with yellow berries are not uncommon, but we never happen to have seen one of our native Hollies with clear yellow berries until we received some specimens from Professor Massey, of the North Carolina Agricultural Experiment Station. Professor Massey says the trees are not common there, but there are a considerable number of them. It is rather remarkable that so little has been heard of them and that they have not been propagated for commercial purposes.

The parts of Engler & Prantl's *Pflanzenfamillien* from 120 to 125, inclusive, have recently reached us, and are devoted to the Loganiaceæ, by Solsreder; the Gentianaceæ, by Gilg, and the Apocynaceæ and Asclepiadaceæ, by Schumann. Part 123 is accompanied by a most instructive and interesting illustration from a photograph made in the state of Hidalgo, Mexico, showing in the foreground masses of the tall stems of the Old Man Cactus, Cephalocereus senilis, and large specimens of the spherical Echinocactus ingens.

The leaves of the Japanese Grapevine, Vitis coignetiæ, were killed in the Arnold Arboretum this year by the frost before they assumed their autumn colors. Generally they take on hues of great brilliancy, and they make a wonderful display in the forests of Japan where they climb into the upper branches of the loftiest trees. We have received recently from Mr. A. Blanc, of Philadelphia, some leaves of this vine which were intensely scarlet, and a large plant covered with them would certainly make a striking display. V. coignetiæ ought not to be overlooked by any one who is planting with a view to autumn effect.

Not long ago Professor Bailey told one of his classes that he was impressed more and more with the fact that persons who know nothing about horticulture to begin with often become most successful when they once enter the business. This simply means that these men start without any prejudice and with everything to learn, full of enthusiasm, and with minds open to accept any new teaching which commends itself to them. Not long ago he visited one of the largest and most successful establishments for growing mushrooms and forcing vegetables in the country, where the manager but a few years ago knew nothing whatever of the business. Perhaps many of the best farmers of the future may be those who have not been brought up on farms of the present time.

Among the nuts exposed for sale we have lately observed for the first time in our fruit shops the Souari, or what are known as butternuts in the English market. They are called here cream-nuts, which name is really descriptive of their rich meat, and African nuts, although really they come from South America, where they are borne on a tree known to botanists as Caryocar nuciferum. They are somewhat kidney-

shaped, with a rich red-brown, warty and very hard shell. It requires a smart blow from a heavy hammer to burst this shell, since it is nearly half an inch thick in places. The nut is, perhaps, three inches in length at its longest diameter, and the chamber has a smooth satiny lining and incloses a soft, pure white kernel of a rich nutty flavor and covered with a brown skin. There are four of these seeds, or nuts, in the spherical fruit of the Caryocar, which is as large as a child's head. The tree itself often reaches a hundred feet in height, and its hard wood is very much prized for durability.

At this time of holiday display few places are more attractive than the shops where the finest fruits are sold. Even our commonest fruits, like apples and pears, when at their very best, all even and perfect in form and color, make a feast for the eye, while their fragrance, with its suggestion of their delightful taste, makes a combination most grateful to the senses. By the help of cold storage many of the late autumn pears are still offered, but none of them are more beautiful than the attractive yellow Beurre Boscs from Boston with one flushed cheek and dots and streaks of cinnamon. Not quite so handsome, but larger, is the Duchess; but there is no need to go through the list, for nothing can be more beautiful and few perfumes are more delicate than their musky or aromatic odor. Perhaps the most ornamental among the apples is the glossy little Lady Apple with a red cheek on a lemon-yellow ground. Very attractive, too, is the crimson-shaded, light green York Imperial, the dark red Winesap, from Virginia, and the perfectly shaped King. Neat-looking strawberries can be had for seventy-five cents a basket, and Black Hamburg grapes, with berries almost as large as a plum, cost $2.00 a pound. Nectarines, from Rhode Island hot-houses, of fair size and good color, are worth a dollar a dozen, while the occasional grape-fruit, borne on the few remaining trees in Florida which escaped the freezing weather last winter, commands $2.50 a dozen. Pomegranates of unusual beauty, their leathery rinds just tinged with an orange-red, bring $2 00 a dozen, while prickly pears of a delicate flesh-color and tufts of small pink spines are quite as handsome as any other fruit and may be had for fifty cents a dozen. The Japanese persimmons are larger, more beautiful and better-flavored than any ever seen in this city before. It may be that the best varieties are just becoming sufficiently plentiful to be marketed in quantity. At all events, there are three or four kinds on sale quite distinct in shape, some of them being round or flattened, others egg-shaped or conical, some a rich yellow and others a deep red, and there are dozens of them together which average at least three inches in diameter, with a luscious pulp and a marked flavor which makes them quite superior to the commoner kinds which are somewhat undecided and characterless in taste.

The staple variety of Blackcaps for evaporating is the Ohio, although the Gregg is properly crowding it out in many of the best berry sections. This latter variety is valuable because it demands better land and better cultivation than that under which the Ohio will thrive. It, therefore, has a salutary and stimulating effect upon the grower, and when it has this good care it is an abundant and sure cropper. The red varieties are seldom evaporated, because there is little demand for them; they require too much time on the tray, and too many of them are needed to make a pound. The Cuthbert is the only red berry which is evaporated. The Shaffer is the only purple berry that is dried in any commercial quantity, but it is hardly profitable to handle since it loses too much in the process. The new Columbian Raspberry is rather more vigorous in growth than the Shaffer, has a longer season, is firmer, with more uniform drupelets, and will probably be better than the Shaffer for drying. The amount of fresh berries required for a pound of the cured product is variable. On an average a little more than three quarts, say four pounds, of Blackcaps, are needed to make a pound of evaporated fruit, and in moist seasons four quarts are usually required. At the end of the season, when the berries are small and dry, two quarts may make a pound, while from four to five quarts of red berries are needed. When evaporated raspberries were first put upon the market thirty to forty cents a pound were common prices, but as these were clearly excessive they fell as production increased. From sixteen to seventeen cents a pound has been the average price for the past three or four years, and there is profit in these prices when there is a good crop, but there are many fields in which twice this price would not leave any margin over expenses. All these details are found in the interesting Bulletin No. 100 of the Cornell Experiment Station, to which allusion was made in a recent editorial article. According to Professor Bailey, some growers hold that the berries should go into the evaporator when the price falls below eight cents a quart, while others sell them until they fail to net seven cents. An efficient evaporator has a good effect both upon the market and the grower. It keeps the surplus green fruit out of commerce and informs the buyer that he must keep prices up to the paying level or he cannot get the fruit. It makes the grower, in a measure, independent of the market, and more than that it leads him to save windfall apples and surplus berries and other material which would go to waste.

Mr. M. S. Bebb, the accomplished salicologist, and, since the death of the Swedish botanist, Andersson, in 1880, the best authority on the difficult genus Salix, died on the 5th instant at San Bernardino, California, where he had gone from his home in Illinois a few weeks ago, in the hope of obtaining relief from the pulmonary troubles from which he has been a sufferer for several years.

Michael S. Bebb was born on December 23d, 1833, in Butler County, in south-western Ohio, then nearly a wilderness, where his grandfather, Edward Bebb, a Welshman, had been one of the first settlers in the fertile valley of the Miami River. His father was a teacher and then a successful lawyer in Hamilton, the county town to which the family removed in 1835, and in 1846 was elected Governor of Ohio. A garden well-stocked with flowering plants and fruit-trees surrounded the Bebb mansion in Hamilton, and here the future botanist, while still a boy, acquired his first knowledge of plants, learning laboriously, without the aid of a text-book, the rudiments of the science from a copy of Torrey's *Report upon the Flora of New York*, which had accidentally come into his hands. In 1850 Governor Bebb retired from politics and moved to a large tract of land which he had purchased in the Rocky River valley in northern Illinois, near the present town of Fountaindale. Here the lad's love of botany was confirmed by the acquisition of other botanical books and by the acquaintance which he made five or six years later with Dr. George Vasey, then of Illinois, and for many years before his death the botanist of the Department of Agriculture of the United States. This acquaintance led to an interchange of specimens; and about this time, too, he visited New England, where he met several men of science who confirmed him in his intention to devote himself seriously to the study of botany. During the War of Secession Mr. Bebb accepted a position in the Pension Bureau in Washington, which he held for several years, and then, returning to Illinois, he purchased the paternal homestead at Fountaindale and settled down to botany, and especially to the study of Willows. The largest and most complete collection of these native and exotic plants which has been made in the United States was planted by Mr. Bebb at this time on land near his house, but, unfortunately, was destroyed a few years ago when he had taken up his residence in Rockford, Illinois. Since 1874, when he described his first Willow in *The American Naturalist*, all the collections of these plants made in North America have been studied by him. He described the California species in Brewer & Watson's *Botany of California*, the south-western species collected by Rothrock in the sixth volume of *Wheeler's Reports*, the Colorado species in Coulter's *Manual of Botany of the Rocky Mountain Region*, and the species of the eastern states in the last edition of Gray's *Manual*. He has determined the Willows collected by the officers of the Geological Survey of Canada in all parts of British America, and has contributed to botanical journals many papers upon the American species of the genus, including an important one published in *The Bulletin of the Torrey Botanical Club*, upon the Willows of the White Mountain region of New Hampshire. His latest publication appeared only two weeks ago, when he described a new species of Willow from Washington in the columns of this journal, which he has enriched during the last months of his life with a series of papers devoted to a discussion of the specific rank, distribution, etc., of several of the least-known and most interesting tree Willows of the continent. It was Mr. Bebb's intention to have elaborated in the form of a monograph the results of his long and careful researches upon American Willows; and during the last year he has devoted as much time as his failing strength would permit to reexamining for this purpose the mass of material which he has gathered in his herbarium.

Mr. Bebb will be known to science as an acute and enthusiastic botanist, but those who have met him remember him first of all as a delightful companion. He was a generous, high-minded man, with great dignity and urbanity of manner, and one who always inspired respect as well as affection. To a very wide circle of naturalists with whom he has been a helpful and unselfish co-worker his death will be felt as a personal loss.